Attachment A_AOC Items 64_65_75. Resource Assessment Summary (MS4 Program) - By Dec 31, 2017

CDOT Water Quality Program Expenditures and Resource Assessment Gap Analysis

MS4 Program Item	Estimated Annual Expenditures prior to 2015 Audit (1)		Expenditures or One Time Added Funds Acquired since 2015 Audit forward (2)			Future Committed Resources over Column (2) Average Annual Expenditures (yearly or 1 time) (3)		Uncommitted Gap Resource Needs		Notes: (see footnote for explanation)
	Staff FTEs	Other Budget Items	Staff FTEs	Average Annual Expenditures (during 2.5 year period) and planned for going forward	Other One-Time Budget Items during this 2.5 years	Staff FTEs	Other Near-Term one-time Budgets Committed to in addition to the Avg. Annual Expenditure following the Audit (except as noted)	Gap $	Gap FTEs	
PWQ Program										
PWQ Mitigation including Pool Fund for PWQF installation	0*	$6,500,000	0*	$6,500,000	$5,000	0*	$0	$0	0*	**(1)** Averaged about $6.5M/yr which was used to established column (2) **(2)** A reliable budget of $6.5M which is now a budget item automatically allocated every year per CDOT's 2015 MS4 Permit for PWQF installation instead of pulling from project budgets. Plus $5,000 for consultant support during a temporary staffing shortage. The committee involves several CDOT staff but this will be covered under general staffing support below. **(3)** No additional funds are required. Staffing covered by existing staff, and supplemented by contractor support as needed.
PWQF Inventory Completed	0*	$150,000	0*	$55,000	$43,850	0*	$0	$0	0*	**(1)** $50,000 to map Stormwater area treated by PWQF, and $100,000 to create a long range planning tool for PWQ installation partnering and strategy (both SPR funds). Inventory tracked in Excel spreadsheets had been happening for a few years but was incomplete. **(2)** After Audit: Some funds were averaged annually such as that to hire interns ($30K) + $25,000/yr was allocated for mapping of the PWQ facilities (SPR funds). Under the one-time costs, $30,000 was added using SPR dollars to purchase GPS equipment. R2 also hired consultants to help verify their PWQ inventory at $13,850. Water Quality staffing covered by existing staff, and was supplemented by other support as needed and are covered under the General MS4 Program Budgets and Staffing below. PWQF Inventory is now complete and data is verified as accurate. **(3)** Staff will continue to update the PWQF inventory to support maintenance tracking. At a minimum, this inventory will be updated for each MS4 Permit required annual report. At this time, no additional resources are considered necessary to have a complete PWQF inventory although improvements to the database will continue to be added with HQ intern support ($30K) and with other mapping support as needed as covered by the General MS4 Program Budgets and Staffing below.

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Deep-Cleaning (one time) extra PWQF maintenance - Contractor	NA	NA	1.25	NA	$3,350,000.00	0*	$3,350,000.00	$0	0	(1) This deep-cleaning effort was addressed after the audit so this "deep-cleaning" maintenance concept is new since the audit. This idea was to bring up to standards all PWQF, including the ones that had previously been missing in the PWQF inventory. (2) CDOT has received the first half of the $6.7 million for this "deep-cleaning" effort of the PWQFs ($3,350,000). CDOT has been strategizing how this work will be accomplished - it was decided to contract all of this work out and CDOT is trying a super-efficient Job Order Contract as a pilot in Region 2. The request for proposal is already on the street for bid. The staffing support showed here is a combination of maintenance, management, and contracting support to make this happen and totals to about 1/4 of an FTE. CDOT Maintenance has posted a contract manager position (at an Administrator IV level) for managing PWQF contracts and interviewed the first round of candidates 1/11/18.The rest of the regions' contracts will soon follow (expected to mostly be needed in R1 and R4 since R3 and R5 have all of their PWQF maintained by local agencies) - all maintenance work on all PWQF will be completed before the end of the MS4 Permit term (July 2020). Per AOC #65, CDOT will allocate adequate funding to conduct these deep-cleaning maintenance activities in the regions, but this work will be managed through a HQ Maintenance contract so the funding will reside in this contract. CDOT region staff will be involved in the assessment and approval of the work. (3) Already, the second $3.35M has a funding commitment from the Transportation Commission for funding in July 2018. It is expected that routine maintenance will be easier to accomplish once all of these PWQF have been brought back to near-new condition. Therefore, any further deep cleaning will be on an as-needed basis but is expected to be minimal.

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Routine PWQF Maintenance	5	$150,000	7	$258,800	$0	0.5*	$302,200	$0	0*	(1) This pre-audit expenditure is likely underestimated due to the inconsistent way of tracking maintenance work orders in the past. The number of maintenance staff maintaining PWQFs is estimated for the 3 regions with PWQF maintenance responsibilities: R1 = 14, R2 = 5, & R4 = 3 (and not full time for this work so estimated at 5 full time FTEs), these numbers are relative to the number of PWQF in those regions. (2) This post-audit expenditure is still likely to be underestimated, although the tracking of PWQF maintenance by work orders was much better than before the audit. These are costs from the 3 regions with CDOT maintained PWQF. These costs are $118,000, $62,000, and $78,800/yr. This amount covers a "maintenance visit" for 1/4 to 1/3 of the facilities in the regions per year. This does not include local agency funds. (3) CDOT is considering contracting out routine maintenance as well - the FTE for deep-cleaning maintenance above would continue to support this effort and maintenance staff experienced in this would continue to provide emergency or as-needed support. Even with using current allocated maintenance budget to cover this effort, CDOT may need approximately $300K of additional funds, if annual maintenance is required on every PWQF - this is likely the worse case scenario. CDOT will reallocate funds to this effort for routine maintenance and if there are emergencies, funds will likely come from other current maintenance budgets or the Transportation Commission, which has contingency funds to allocate for emergencies. The contingency funds can be used to: a) Cover the rest of the contracting costs, plus b) cover emergency response costs for flooding during storm events by CDOT crews estimated here at $30,000 for the state. Local agency maintenance is covered by their budgets. Total needed, if routine PWQF Maintenance is conducted annually, is: R1 - $330,000; R2 - $185,000; R3 - $0 (except for emergency needs); R4 - $16,000; and R5 -$0 (except for emergency needs). Maintenance staff that are certified in PWQF Inspection will verify that the contractor has completed the work they are scheduled to do. The time required is estimated to be 2.5 days for every 10 sites (for approximately 500 sites that are CDOT maintained).

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Diagnostic (Deep-Cleaning)/Routine PWQF Inspection	1.5	$0	1.5	$43,850	$0	0*	$90,000	$0	0*	(1) These inspections were conducted through a combination of maintenance staff (shown as 1 for R1, and 1/4 for R2 and R4 each) and water quality (WQ) staff* (included under General WQ below) as requested by maintenance, or for "compliance" inspections that are "once-per-permit-term" prior to the audit. (2) After the audit, inspections by WQ staff were conducted: a) to address those PWQF findings identified by EPA, b) to price expected maintenance costs by PWQF type in order to address AOC #64 and 65 ($30K for intern support), c) as requested by regions to support on-going PWQF maintenance work, d) to help verify and correct coordinate/locational issues within the database. The inspections were prioritized to start in Region 2 to support a deep-cleaning maintenance contract pilot ($13,850 for R2 consultant support). Maintenance staff continued to inspect and do maintenance work on PWQF during this time. (3) Going forward, initial inspections prior to contracting work will be accomplished by region WQ staff or their consultant (estimated at $50K/region state RPP funds for consultant support and $40K from HQ for intern support) and will include inspections of the local agency-maintained PWQF to ensure these are being managed appropriately (the commitment of the estimated necessary financial resources to do this at the region level was confirmed in the RTD meeting on Jan. 16, 2018). HQ WQ staff or their designee will conduct "compliance" inspections of "once per permit term" for all PWQF and can double for some of these contracting inspections. Maintenance staff will also inspect and support emergency PWQF maintenance during storm events. The PWQ program communication SOP is being updated with CDOT's new GoeE Linear Asset Management System that relays inspection findings to the appropriate people to address. The staffing going forward has changed to be entirely water quality specialists and is covered under General WQ budgets below except as noted for consultants here).
Linear Asset Management System development called GoeE	NA	NA	0*	NA	$250,000	0*	$0	$0	0	**(1)** NA **(2)** Tracking maintenance costs was identified as needing improvement. PWQF Asset Management accounts for 12% of this total cost (over $2M), with this being applied to other assets as well. **(3)** Refinements to this system continue with this existing funding. Future improvements are expected once this system has been in place for a year or two.

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MS4 Construction Sites Program										
Inspection/Oversight	0*	$0	0*	$0	$289,500	0*	$72,000	$0	0*	**(1)** This is a major time commitment from WQ Staff - there is at least 1 MS4 Construction Sites Program staff in each of the 5 regions and 1 at HQ. This is counted in the "General MS4 Program Budgets and Staffing" below. **(2)** More resources were added to Inspection/Oversight following the audit. R3 added a consultant (former CDOT WQ staff assumed at $60K), R4 added a position (listed under "General MS4 Program Budgets and Staffing", and R5 used an Intern during the summer (assumed at $12K). Other resources added from SPR funds include $90K for updating the Erosion Control Pocket Guide, $75K for the SWMP Preparers Class, and $52.5K for ESCAN Updates (CDOT's electronic inspection tracking software). **(3)** The added resources will continue as well as HQ reassigning a previous WQ office staff to the field to support this work. Additional consultant help from HQ is covered below under "General MS4 Program Budgets and Staffing". The RTDs committed to continue supporting the region resource needs to hire consultants/interns in the January 16, 2018 meeting. The amount in this column is an estimate from past expenditures.

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Pollution Prevention/Good Housekeeping (Facility Runoff Control Plans)										
Inspections - Monthly	7.15	$0	7.15	$0	$0	0	$0	$0	0	**(1)** Done by current Maintenance staff as trained in the Maintenance Training Academy (MTA). For 48 Maintenance yards in MS4, there are 91 auditors and 58 administrators in maintenance to support this effort - this is not a full time job and is assumed to be an average of a day for each person per month = 7.15 full time FTEs. **(2)** Done by current Maintenance staff as trained in the MTA as modified since the audit, and on-site training of staff as needed. These job classifications are now TMs and LtcOps but are the same people as before. **(3)** Done by current Maintenance staff as trained in the MTA and Onsite going forward. Requirements are being added to also inspect and maintain asphalt and concrete surfaces to minimize future maintenance costs.
Inspections - Annually	0*	$0	0*	$0	$0	0*	$0	$0	0	**(1)** Done by EPB staff - 0.5 of an FTE and region WPCM when available **(2)** Done by EPB staff - 0.5 of an FTE and region WPCM when available **(3)** Done by EPB staff - 0.5 of an FTE and region WPCM when available * There may, or may not be a region WQ staff in attendance at any time.
Typical annual Pollution Prevention/Good Housekeeping (PPGH) Expenditures	0**	$323,000	0**	$366,200	$0	0**	$40,000	$0	0	**(1)** In CY 2015, it was difficult to track expenditures because often times work was included in other work items and not separated out. The tracked expenditures for CY 2015 in MS4 statewide were $323K. Because of how expenditures are tracked for maintenance activities, we do not have an average spent per year prior to the audit so this is a surrogate number for that work. **(2)** This number represents 2.5 years of expenditures since the audit and are averaged as follows: 1/2 of 2015 ($161.5K) plus 2016 ($346K) was an improvement in tracking, over 2015, plus 2017 ($408K) that was better even than 2016. To total $915,500 during the time following the audit until present/2.5 yrs = $366,200/yr. The improved tracking of data and addressing the required work can be attributed to the Maintenance Training Academy (MTA) curricula regarding implementation of Facility Runoff Control Plan (FRCP) monthly and annual inspections. **(3)** This funding amount assumes that if added to the average annual expenditures column an extra $40K will bring the $366K up to 2017 expenditure levels. The findings fixes going forward will continue to be financed out of the maintenance budget (will use 2017 numbers as an estimate of future costs); a new approach of crack-sealing pavement on the maintenance yards before they become significantly damaged will keep the annual maintenance costs within these budgets. The next category in this table are expenditures that have become necessary when pavement and drainage repairs are not attended to in a timely manner. **Staffing numbers are assumed to be the same folks above that attend to the monthly inspections, or specialists in the regions called in for a task.

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Needed Repairs - One time, from Facility Runoff Control Plan (FRCP) inspection findings	NA	NA	4	NA	$4,200,000	8.25	$0	$0	0	**(1)** NA **(2)** These repairs were identified during the Facility Runoff Control Plan (FRCP) annual inspections as additional resources needed. A funding justification was taken to the Transportation Commission who approved $4.2M for this work. This is being managed out of Maintenance (2 staff) with Property Management (2 staff) and WQ staff support (*WQ staff support is covered below under "General MS4 Program Budgets and Staffing"). Funds will be given to the regions on a cost-reimbursable basis, or as "materials provided". **(3)** Maintenance estimates for work to be accomplished by CDOT maintenance staff are underway and could include regional crews (rough estimate at around 165 part time support = assume 2.5 weeks per person and that comes out to 8 1/4 full time FTE). Work over $150K will be phased between fiscal years. Work needed going forward will be included in the annual budgets for the maintenance yards or as requested from the statewide maintenance budgets. It is expected that with routine surface treatment maintenance, these needs should not be as costly going forward. Staffing should not be required to be added to support this effort. This is covered above under "Typical Annual PPGH Expenditures".
WQ solar distillation pilot to improve water quality at CDOT facilities or construction projects	NA	NA	3	NA	$100,000	0	$0	$0	0	**(1)** NA - With the change in regulations restricting the "injection" water quality to leach fields, CDOT continued to look for ways to solve the issue of dirty discharges from remote maintenance yards that were on leach field systems. Although not in MS4 areas, this research might also address those that are in MS4. **(2)** CDOT Property Management (3 staff) worked with some innovative engineers to design a solar powered distillation system to help clean the oily/salty water from maintenance facility drains. What a surprise we found! The system cleans better than reverse osmosis, is energy efficient, and is portable so it can be used on construction projects that have contaminated water from dewatering (e.g., like for arsenic contaminations found on an I25/Santa Fe project). Amazing! We also piloted this on naturally occurring radioactive groundwater that was found in one of CDOT's maintenance yard wells and it works! **(3)** This system has a variety of costs, depending on where you want to put them - right now, these are not needed in MS4 so the expenditure in labeled as $0. But you can get a system for $70K that will last 10 years, plus you can pay for a monthly maintenance fee to make it worry free.

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General MS4 Program Budgets and Staffing (General WQ Support)										
Resources spent supporting and responding to the EPA Audit (Not added to table totals since this was part of the MS4 Permit compliance and would entail double counting in some cases)	1.2 FTEs	$96,000 for 2400 hrs staff time to prep for audit	5 FTEs	NA	$402,000 for 10,050 hrs to respond to audit findings; plus $10,000 for Maintenance responses Plus $90,000 for construction program changes and tracking these in ESCAN.	3 FTEs	$244,000 for 6100 hrs to complete the deliverables in the AOC	$0	0	**(1)** This was for preparing for the EPA audit. There were a lot of data requests prior to the week of the audit. The water quality and other staff spent about 1500 hrs just pulling together data for the audit. There were also informational briefings and the engineering and maintenance attendees to these briefings were not tracked but is estimated about 300 people for 3 hrs at 900 hrs for a grand total of 2400 hrs of staff time. CDOT Audit estimated the load rate for an average hourly rate is $40/hr - this is the budget that is submitted here $96,000 that represents staff hours spent. **(2)** Other staff besides the WQ staff were involved with the EPA audit support and response including a lot of management time from the top down(estimated time). Maintenance was also involved and not everyone tracked their time in SAP so some is estimated. Trainings and the Construction Task Force also had non-WQ folks that did not track time. The WQ staff tracked 6000 hrs in response to the audit. Estimated another 4050 for other non-WQ staff support in management, maintenance, and engineering. These are probably underestimated. So a total of 6000 + 4050 = 10,050 hrs x $40/hr load rate = $402,000. Cost to handle PWQ and Maintenance Yard requirements, including the dye test, were $10,000. Then needed to work out a statewide consistent approach through a task force to the construction program (facilitator $40K) and needed to get specification changes and construction program changes into ESCAN ($50K) = $90K **(3)** Management time is still needed for resource support, and strategies that involve management decisions including the use of additional resources or a change in process. Deliverables in the AOC include completing the Design Build risk assessment and set up processes to minimize this, tracking and auditing construction and PWQF performance/maintenance, and implementing the funding programs for specific issues improved since the EPA audit. It is estimated that this might take and additional 6100 hrs * $40/hr = $244,000. This is just responding to AOC, it is not about implementing the MS4 Permit in general.

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General WQ support (including: Training development & delivery including BMP Training Facility/Temp Labor/ PWQ Inventory Inspection & Mapping/ Changes in Construction Specs/ ESCAN development/ Tool and Manual development/ Other WQ Needs and support)	18	$600,000	24	$600,000	$900,000	0	$0	$0	0	**(1)** This assumes HQ budget/yr commitment of $600K that supports HQ Temp labor, training development & delivery, program changes, PWQ inventory & mapping, etc. FTEs: HQ: 7WQ + 2 Landscape Architects (LA), R1:2WQ + 1LA, R2: 1 WQ, R3: 1WQ + 1LA, R4: 1WQ, R5: 1WQ + the equivalent of 1 full time hydraulic engineer (3 at R1, 2 at R2, and 1 for the other 3 regions and 2 at HQ). **(2)** This assumes the ongoing HQ budget/yr commitment from the Transportation Commission of $600K + The one time commitment includes the $900,000 at HQ for program support to implement the 2015 MS4 Permit and EPA program changes required from the audit. FTEs: HQ: 7WQ + 3 Landscape Architects (LA), R1:4WQ + 1LA, R2: 1 WQ, R3: 1WQ + 1LA, R4: 2WQ, R5: 1WQ, + the equivalent of 1 full time hydraulic engineer (3 at R1, 2 at R2, and 1 for the other 3 regions and 2 at HQ). CDOT is in the process of adding an extra WQ staff to HQ in Feb (and repurposing an office WQ staff as a field WQ staff but not counted as added staff). R1 is adding a WQ/Environmental staff to their maintenance crew. And HQ Maintenance is adding an Environmental Manager (mentioned under PWQF maintenance) to help manage all this specialized water quality contract work. Also, the regions and HQ replaced all WQ staff that left CDOT. Usage of funds includes: - Training development and delivery including PWQF Inspection and Maintenance, SWMP preparer/reviewer, Transportation Erosion Control Supervisor, MS4 Program, focused trainings, etc. - ESCAN - Construction Inspection tracking tool updates - New Wet Weather Monitoring sampling equipment 250+/yr Maintenance trained; and over 2700 non-maintenance trained since 2014 **(3)** It is not expected that additional budget for WQ support is needed at the HQ level. Added consultants/interns at the regions would be supported by their regional directors (RTDs) and have been assessed under PWQ and Construction programs above, but this funding level will be assessed as the MS4 Program changes mature.

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TOTAL	**31.7**	**$7,723,000**	**47.90**	**$7,823,850**	**$9,138,350**	**8.25**	**$3,854,200**	**$0**	**0**	**Totals do not add the staff time in dollars spent for the EPA Audit support since this is also part of the program.** **(1)** The general expenditure of $7.7M occurred in the program prior to the EPA Audit. The staffing level was at about 32 staff. **(2)** Although the general expenditures for the typical re-occurring budgets did not increase much (a little more maintenance expenditure), there was an influx of funds to help address changes required due to the new MS4 Permit and the EPA audit requirements that overlapped. These additions amounted to $9M in one-time funds to get back on track. Staffing was also increased to 48 to help handle the increased MS4 Permit requirements and increased expectations by EPA: some were in water quality, but many were in maintenance. **(3)** With the new program direction, especially for PWQF maintenance, there is an increase in maintenance staff expectations beyond what the WQ staff traditionally handled. Going forward, of the $3.85M additional committed funds needed to run a compliant MS4 program, $3.35M is a one-time cost. The rest of the expected committed funds are from a) the Executive Management for consultants (totaled here at $162K for the state) assisting environmental staff maintain compliance with the MS4 Permit b) the maintenance budget of an additional $40K for PPGH, and c) the maintenance budget of $302K for PWQ maintenance, which may actually be less in the future since $302K is our expected worse case scenario. CDOT Executive Management and the RTDs are committed to support MS4 Program needs by using contractors going forward so this is not considered a Gap that will not be covered. Eight FTEs are being used for major maintenance yard repairs, and will drop back to their regular duties once this work is concluded.

Note Footnote:
(1), (2) and (3) represent the 3 main column explanations
Red underlined text explains the plan for getting the Gap resources
* Is a note that Water Quality (WQ) staffing support for that item is covered under "General MS4 Program Budgets and Staffing" since these often include a fraction of a whole WQ positior